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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/534,569

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Andrew T. Hunt

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EXAMINER

GREGORIO, GUINEVER S

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/534,569	Applicant(s) HUNT ET AL.	
	Examiner GUINEVER S. GREGORIO	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01/09/2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 44-71 is/are pending in the application.
- 4a) Of the above claim(s) 63-71 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 44-62 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Newly submitted claims 63-71 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: A requirement for restriction was mailed out 06/13/08. Applicant's elected, without traverse in the response filed on 07/14/08, Group I, claims 1-10. Group 1 was directed to a process comprising reacting droplets of organic compounds. Applicant has since canceled claims 1-10 and presented a new set of claims. In the new set of claims applicant has a process and a product which contain different special technical features. For example the process claims are directed to atomizing a fluid and can be used to make particles other than a composite comprising inorganic powder less than 100 nm coated with a carbonaceous material.

Nonetheless, since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 63-71 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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1. Claims 44-62 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
2. Regarding claim 44, the phrase "predominantly" renders the claim indefinite because it is unclear what predominantly less than 20 microns encompasses.

Claim Rejections - 35 USC § 103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 44-62 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hunt et al. (U.S. Pat. No. 6,132,653). Hunt et al. teaches atomizing precursor/solvent solution which corresponds to the formation of said particles the droplets contain or are exposed to a second element or compound or precursor (column 14, lines 1-5). Hunt et al. teaches propane, butanol, methanol, isopropanol, toluene which correspond to a fluid comprising an organic compound (column 8, lines 35-40). Hunt et al. teaches introducing the atomized or vaporized solution to a flame or plasma torch which corresponds with reacting said organic compound in said droplets to form particles containing carbon in elemental form (abstract). Furthermore, Hunt teaches introducing said solvent into a flame or nebulizer which would inherently or obviously cause organic compound in said droplet to form particles containing carbon in elemental form and also expose precursor to the formation of elemental carbon so that the precursor is incorporated with the elemental carbon as the particles are formed. Hunt et al. teaches the nebulized solution spray is a

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vapor or an aerosol having a maximum droplet size less than 2 microns which is predominantly less than 20 microns in size (column 8, lines 27-31).

4. Regarding claim 45, Hunt et al. '653 teaches a substrate cooling means comprising a means for directing water onto the substrate or other methods known to one of ordinary skill in the art (column 11, lines 48-53). Furthermore, Hunt et al. '653 teaches carbonaceous material (column 11, line 55).

5. Regarding claims 46 and 47, Hunt et al. teaches the nebulized solution spray is a vapor or an aerosol having a maximum droplet size less than 2 microns which is predominantly less than 20 microns in size and predominantly less than 1 micron (column 8, lines 27-31).

6. Regarding claim 48, Hunt et al. '653 teaches combustion reactions (abstract, lines 6-14).

7. Regarding claim 49, Hunt et al. teaches cation precursors (column 22, lines 49-55).

8. Regarding claim 50, Hunt et al. teaches a coating completely or partially composed of elemental carbon wherein additional dopants or precursors are added which corresponds to a composite of inorganic and carbonaceous materials (column 13, lines 54-67; column 18, lines 1-20).

9. Regarding claim 51, Hunt et al. teaches using a water jet for cooling means which corresponds with a cooling medium is liquid in the form of sub 20 micron sized droplets (column 20, lines 65-67).

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10. Regarding claims 52, 53 and 62, Hunt et al. teaches cation precursors (column 22, lines 49-55). Furthermore, Hunt et al. teaches a coating completely or partially composed of elemental carbon wherein additional dopants or precursors are added which corresponds to a composite of inorganic and carbonaceous materials (column 13, lines 54-67; column 18, lines 1-20). Examiner takes the position that the inorganic and carbonaceous materials qualify as the formation of two different materials.

11. Regarding claim 54, Hunt et al. teaches utilizing supercritical solutions for the formation of powders and particles (column 5, lines 50-67; column 6, lines 1-45). Hunt et al. teaches various materials wherein material is coated with carbonaceous materials, diamond material, nitride, carbide, boride, metal and other such materials. Examiner thus takes the position that the method for forming particles using supercritical solutions will either inherently or obviously produce a polymer material as evidenced by Tom et al. (Formation of Bioerodible Polymeric Microspheres and Microparticles by Rapid Expansion of Supercritical Solutions; Biotechnology. Prog., 7 (5), 403-411; 1991) which teaches rapid expansion of supercritical solutions is a method of particle formation such as polymeric materials.

12. Regarding claim 55, Hunt et al. teaches liquid propane as a solvent which is a gas at standard temperature and pressure which corresponds to a liquid source which contains liquefied or dissolved gas (column 17, lines 55-67).

13. Regarding claim 56, Hunt et al. teaches a process comprising very fine atomization or vaporization of a reagent containing liquid or liquid-like fluid near supercritical temperature which corresponds to a liquid source heated sufficiently

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(abstract, lines 1-4). Furthermore, Hunt et al. teaches a solution heated prior to release through a nozzle (column 5, lines 22-25).

14. Regarding claim 57, Hunt et al. teaches powder forming (column 12, lines 8-11).

15. Regarding claim 58, Hunt et al. teaches the nebulized solution spray is a vapor or an aerosol having a maximum droplet size less than 2 microns which is predominantly less than 20 microns in size and predominantly less than 1 micron (column 8, lines 27-31). Examiner take the position that the method taught by Hunt et al. would inherently or obviously decrease the agglomeration of formed particles and thereby reduce the amount of necking because Hunt et al. teaches using supercritical solvents and atomizing the solution so that the particles size of the reactive droplets are reduced which is commensurate with applicants teachings for the reduction of agglomeration and necking found on page 2 of the specification.

16. Regarding claim 59, Hunt et al. teaches coating a substrate which corresponds with a composite material formed as a layer (column 20, lines 60-67).

17. Regarding claims 60-61, Hunt et al. teaches the deposition of the powder generally above 20 torr which corresponds to the material is formed in a vacuum (column 7, lines 45-65).

Response to Arguments

18. Applicant's arguments with respect to claims 44-62 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

19. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GUINEVER S. GREGORIO whose telephone number is (571)270-5827. The examiner can normally be reached on Monday-Thursday, 10:30-5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curt Mayes can be reached on 571-272-1234. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Gsg
April 24, 2009

/Melvin Curtis Mayes/
Supervisory Patent Examiner, Art Unit 1793